

Fun and games
Tomorrow at
Camp Manison . . .

ROUNDUP

NASA MANNED SPACECRAFT CENTER

HOUSTON, TEXAS



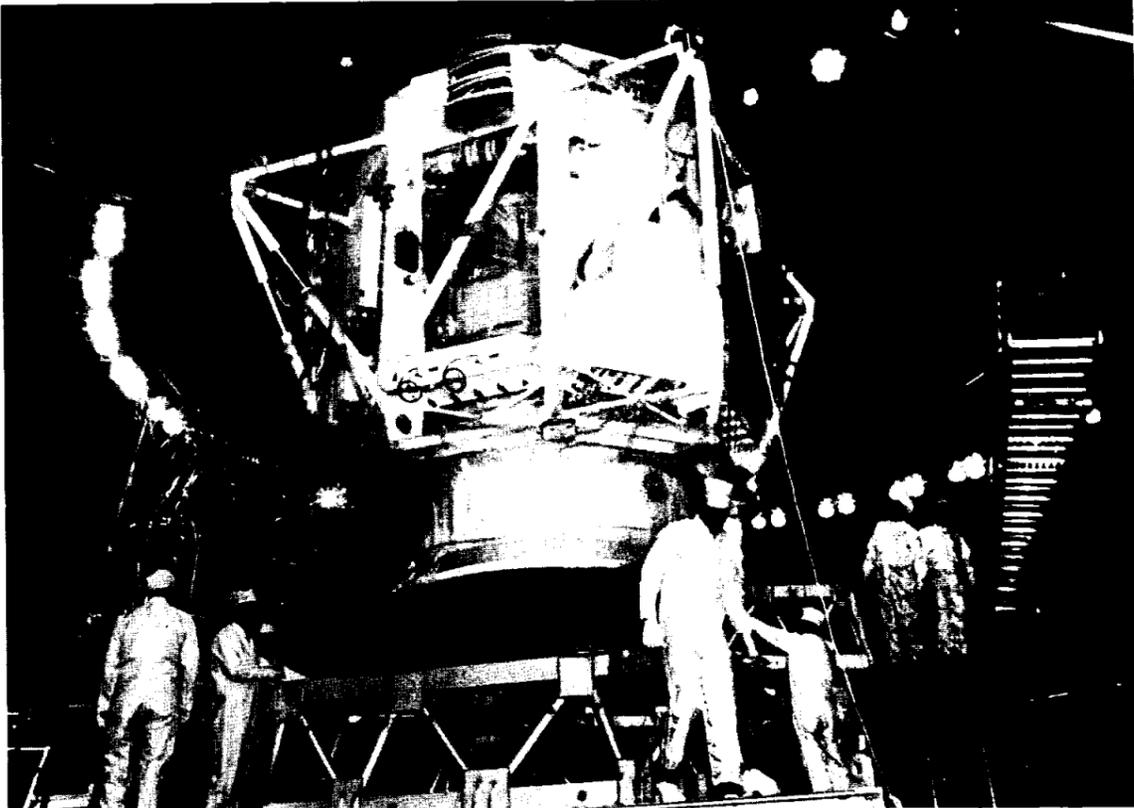
VOL. 10 NO. 23

September 24, 1971

See you at the
1971 MSC - EAA
Carnival - Picnic!



ASIAN ROYALTY—During a one-day visit to Houston, their Imperial Highnesses Prince and Princess Hitachi (far left) of Japan toured the Center. Their host on the tour was Astronaut Stuart Roosa (right). Professor C. J. Huang (center) of the University of Houston, who speaks the court language of Japan plus two Chinese dialects, also accompanied the royal couple. Prince Hitachi is the second son of Emperor Hirohito.



CHAMBER BOUND — The Skylab Apollo Telescope Mount (ATM) prototype arrived earlier this month from Marshall Space Flight Center and is shown here, still under wraps, as it was rolled into Chamber A of the Space Environmental Simulation Laboratory in Building 32 last week. A solar observatory which will operate from earth orbit, the ATM will give scientists views of the sun undistorted by the earth's atmosphere. Thermal vacuum tests are scheduled to begin in the chamber on October 11, preceded by tests on October 1 in which test crews will operate control and display panels located in a man-lock on the third level of Chamber A.

Scientists attempt to set Age of White rock

Scientists at the University of New York at Stony Brook announced last week that the Apollo 15 which some have labeled the "Genesis rock" has proven to be the oldest crystalline rock yet recovered from the moon.

Researchers at the University reported the rock's age to be four billion one hundred fifty million years, 150 million years older than the previously recovered oldest lunar rock.

Evidence from meteorites suggests the solar system to be four billion five hundred fifty million years old, plus or minus 50 million years. Since the Stony Brook findings allow for a 200 million year error, the white rock's max-

imum age could be four billion three hundred fifty million years. A further test run on the rock yesterday may narrow the 200 million year margin of error.

The Stony Brook team was led by Dr. Liaquat Husain, a nuclear chemist from Pakistan. His colleague in the work was Dr. John F. Sutter, formerly a research associate at MSC, now a research geologist at Stony Brook. Both scientists have worked for the past year with Dr. Oliver Schaeffer of Stony Brook who is Principal Investigator for the project.

Researchers at the University use the Argon 40/39 dating (See *RESEARCHERS*, Page 4)

SESL to run Skylab Test series in cooperation with Marshall

The first Skylab flight article to be tested at MSC, the Apollo Telescope Mount (ATM), has gone into the mammoth Chamber A of the Space Environmental Simulation Laboratory (SESL) where extensive testing will begin within the next two weeks.

Following alignment verification in the Building 36 clean room, the 22,000-pound ATM was transferred to the SESL.

Thermal vacuum tests will start there on October 11.

Prior to the beginning of the thermal tests, engineers will perform an abbreviated systems test to verify the operation of all ATM systems. These operations will be controlled from the Control and Display panels, identical to the actual controls which the Skylab astronauts will operate during flight.

Test crews will operate the controls and ATM systems functions will be monitored by the automatic checkout equipment in Building 32. This test, set to start on October 1, will be conducted while the man-lock, located on the third level of Chamber A, is maintained at Skylab cabin pressure.

Two major thermal vacuum tests are scheduled. The first, beginning October 11, will last five days, and the second, set to start on November 4, will last about 18 days. All tests will be operated around-the-clock.

Upon conclusion of the tests, the ATM prototype will be transferred to the Building 36 clean room for post-test alignment verification and then returned to Marshall Space Flight Center.

The ATM tests here follow quality and reliability assurance checkouts which were concluded late in August at the Marshall center. A Marshall checkout team will work with MSC and con-

tractor personnel in the chamber tests. Ed Peck of the Space Environment Test Division is the test director.

The ATM prototype to be tested here is the backup flight item for Skylab. The ATM flight unit, which is being fabricated at Marshall, will undergo similar thermal vacuum chamber tests at MSC in May 1972.

The Skylab ATM is a solar observatory which will operate from an earth orbit. The Skylab cluster consisting of the ATM, airlock module, docking adapter, and orbital workshop is scheduled for launch during the second quarter of 1973. It will be visited by three separate three-man crews for durations of 28 to 56 days.

Shepard named to United Nations job

President Richard Nixon announced recently his nomination of Astronaut Alan Shepard as one of five alternate representatives to the U.S. delegation at the United Nations General Assembly.

Last month in ceremonies at the Pentagon, Shepard was elevated to the rank of Rear Admiral in the U.S. Navy (see photo, page 3).

The UN began its 26th session in New York City on September 21.



APOLLO 16 GEOLOGY — Commander John Young and Lunar Module Pilot Charles Duke are shown here at Owens River Gorge near Bishop, California, during a geological field trip. The crewmen are being trained to identify and interpret fragmental debris of volcanic origin, fragmental debris of meteorite impact origin, and different types of lava flows. The Mono Craters/Bishop area contains a variety of volcanic ash and debris deposits and lava flows with a high silica content. In this photo, Young and Duke are studying deposits of volcanic ash to prepare for the landing at the Descartes site, where the highland plains materials probably consist of volcanic debris and flows. The third member of the Apollo 16 crew is Thomas K. Mattingly, the command module pilot.



RUSTY WAS THERE—Clare Schweickart (right), wife of Astronaut Rusty Schweickart, points out to His Excellency Khaly Abouhamad, Foreign Minister of Lebanon (2nd from right), some features of the Apollo 9 command module in which her husband was a "passenger." John Rantal (left), of Protocol, and Mrs. Abouhamad look on with interest. Astronaut Schweickart was the lunar module pilot for Apollo 9, an earth orbital mission flown in March 1969. The Abouhamads toured MSC last week.

NSA sets date for dinner-meeting

The NASA-Clear Lake Chapter of the National Secretaries Association (NSA) will hold a dinner and meeting at the Sheraton King's Inn on Tuesday, September 28.

The hospitality hour will be-

gin at 5:00 p.m., with dinner scheduled for 5:30.

T. M. (Scotty) Davidson, Manager of Boeing's Houston Operations, will be guest speaker for the occasion and will address himself to the subject. "Secretaries today—Managers tomorrow."

For reservations, call Virginia Thompson at extension 5473 or Shirley Robbins, 488-3300, x3210.

J. Carlson Dies

Jerry W. Carlson, Sr., 30, a contract specialist in the Facility and Laboratory Support Branch, died after a brief illness on September 15.

A native of Longview, Tex., and a graduate of the University of Texas he joined MSC in December 1966. Prior to coming here, he was employed by the Post Office Department in Austin, Texas. At the time of his death, he was enrolled in a graduate program at the University of Houston.

Mr. Carlson is survived by his wife Patricia and two sons, Jerry Warren, Jr., 5, and Eric Randall, 2½.



Two receive their Master's Degrees

William R. Chase of the Flight Support Division and John W. Jurgensen, Information Systems Division and formerly of Flight Support, were awarded master's degrees last month in ceremonies at the University of Houston.

Chase's degree is a master of science in industrial engineering, and Jurgensen received his master of science in mathematics.

Both men took courses under MSC auspices at the University's Clear Lake Graduate Center.

Apollo 11 Medals go to work force

The Manned Flight Awareness Program office recently distributed medallions, cast in part from metal in the Apollo 11 lunar and command modules, commemorating the July 20, 1971 second anniversary of the first lunar landing mission.

Some 4300 MSC employees and associated government personnel assigned to the Center received the medals, which were mounted in plastic display cases.

If you were a full-time employee as of July 20, 1971, and did not receive your medallion, send a memorandum through your division office to NA/Reliability and Quality Assurance Office. Replacements for lost or stolen medallions are not available.

Support contractors can receive medals by writing to Dr. Preston Farish/PM-SS-MGR, Marshall Space Flight Center, Huntsville, Alabama. Contractor supervisors should supply Farish's office with the number of contractor employees who were working at MSC on manned flight programs as of July 20, 1971.

For information on purchasing the plastic display cases, call extension 3371.

Tribute to the Lunar Trio

Now that you've studied
Each crater and cavity,
Defied every concept
Of old-fashioned gravity,

Taken that moonwalk
And proved your agility
Spoken to Earth from
The Sea of Tranquility;

What finale can follow
This fantastic odyssey?
The act that could top it
Is something we gotta' see!

If the world is your oyster,
The moon is your pearl;
We stand at your feat
And the flag you unfurl!

—Mary Gene Meagher—

(published by permission of author,
all rights reserved, 1971.)

(for the Apollo 11 Astronauts)
Mrs. Meagher wrote this poem in August 1969 in Cape Town, South Africa, where, at that time, her husband was the United States Consul General. The poem was first published in the *Cape Times*, a newspaper in Cape Town.

Flyers to begin Ground School

Monday, September 27 marks the first meeting of the MSC Aero Club's private pilot ground school.

Instruction, based on the Sanderson audio-visual course, will begin at 5:00 p.m. in Building 2, Room 511.

Partially subsidized by the EAA, the ground school tuition is \$20. To register, attend the first class or call Bob Moncsko at 488-5854.



SUDBURYAN MEDALS — In early July, the Apollo 16 crewmen traveled to Ontario, Canada, to study crater formations in and near the city of Sudbury. The crater, formed by a 3-mile diameter meteor impacting the area some 1.75 billion years ago, was 5 miles deep and 65 miles in diameter. To commemorate the astronauts' visit there, the Mayor sent medallions from the citizens of the City of Sudbury to the crew members. Receiving the medallions are (l. to r.) Fred Haise, backup commander; John Young, commander, and Charlie Duke, lunar module pilot. Making the presentation is Milton Reim of the Public Information Office. Not present but also receiving a medallion was Tony England, mission scientist.

Skylab could make cold water landing

A series of cold weather environment tests on the performance of the Skylab command module postlanding and recovery systems began last week at Eglin Air Force Base's Climatic Laboratory in Florida.

Skylab flights will cover a much greater percentage of the Earth's surface than previous flights, since the missions will be launched on a 50-degree inclination.

In several months of the year,

Employees on site heed call for blood

Over sixty MSC and contractor employees recently donated blood to Wichita Falls man suffering from a serious kidney ailment.

E. E. Silk a petroleum geologist in that West Texas town, is awaiting kidney transplant surgery which will require sixty pints of blood.

Much interested in the space program, Mr. Silk has visited the Center twice. He also has a long-time friend who works here. This friend, an engineer who wishes no publicity for his good deeds, organized the campaign to find blood donors.

the area over which the spacecraft passes will include conditions considerably colder than previously experienced. There is a remote possibility that an emergency during launch or orbit phases could force a landing in these areas.

To prepare for the possibility of a contingency recovery in a cold region, the tests at Eglin are being run to determine the cold weather limitations of the combined crew and command module.

Engineers from MSC's Recovery Operations Branch are conducting and monitoring the tests. The Medical Operations Division and Technical Services Division are also supporting the test program at Eglin.

On his own time, the MSC engineer posted notices on 100 bulletin boards on site, arranged for the Houston Bloodmobile to collect the donations, and lent his full-time assistance to the Bloodmobile on collection day.

Impressed with the fine response of both NASA and contractor personnel to the plea for blood, MSC's Samaritan-engineer expresses his personal gratitude to all donors.



RIDING IN STYLE ON FIFTH AVENUE — The Apollo 15 crewmen Al Worden, Dave Scott, and Jim Irwin, received a traditional welcome late last month from enthusiastic New Yorkers as the men motored down Fifth Avenue to City Hall, where Mayor John Lindsay presented them with Medals of Honor of the City of New York. The crew also appeared before a session of the United Nations and on the NBC-TV Today Show and ABC-TV Dick Cavett Show.



TRIO — MSC Deputy Director Christopher C. Kraft (center) addresses the American Legion Auxiliary, some 1600 members of which took time away from convention activities in Houston to visit the Center earlier this month. To Kraft's left is U.S. Representative Olin E. Teague of Texas, who is Chairman, Subcommittee on Manned Space Flight of the House Committee on Science and Astronautics. To the right is Astronaut Eugene Cernan, recently named commander of Apollo 17, the last scheduled lunar landing mission.

CANCER INSTITUTE ASKS . . .

Will aerospace talent & techniques bring answer to cancer questions?

At first glance, a space mission and cancer research would seem to have little in common. However, the high standards of technology which both require have laid the foundation for NASA's Technology Utilization Program, an effort to adapt specialized aerospace knowledge to the problems of medical research.

In recent years, the medical profession has realized the need for more sophisticated technology to continue the progress in the health fields. This need led NASA to establish Biomedical Application Teams (BATEAMS), providing a channel for free-flow of information, technology, and ideas between the physical and medical sciences. (See article on heart disease BATEAM, elsewhere on this page.)

Put your thinking caps on, Folks!

If you have an idea for a simple science demonstration illustrating some facet of space research, the Spacemobile people would like to hear about it.

The Space Science Project, of which the traveling Spacemobile (now in its 11th year of operation) is part, makes available to science teachers details of simply-conducted classroom experiments which require small amounts of equipment and are inexpensive.

The Spacemobile, with space at a premium, also needs experiments which can be easily packed into a small area and easily carried by the demonstrator as he makes his school presentations.

If you think of an experiment, send Jim Poindexter, Mail Code AP4, a note describing the experiment or call him at x4434.

OLD ARABIAN PROVERB

He who knows not and knows not that he knows not is a fool—shun him.

He who knows not and knows that he knows not is simple—teach him.

He who knows not and knows not that he knows is asleep—awaken him.

He who knows not and knows that he knows is wise—follow him.

A BATEAM employed by NASA to speed the exchange of space agency-developed technology between aerospace and medicine helped researchers from the National Cancer Institute's (NCI) Leukemia Service solve the problem of monitoring the blood pressure of patients to provide an early detection of physiological shock.

If not detected early, shock is sometimes irreversible and could prove fatal. For some critically ill patients, repeated blood pressure checks using the arm cuff or a catheter inserted into a blood vessel prove impossible.

Searching for another method, Dr. Edward S. Henderson, head of NCI's Leukemia Service, handed his problem to the BATEAM associated with the Research Triangle Institute at Raleigh, North Carolina.

The team found a promising answer at NASA's Ames Research Center. An Ames engineer suggested using an ear oximeter, a device which measures the blood's oxygen content by noting red and infrared light absorption in blood circulating through the ear. Oximeter readings also provide a relative measurement of blood pressure. The infrared reading is not sensitive to oxygen content changes and provides the blood pressure indication.

Ames researchers developed the oximeter in the early 1960's to study the effects of rapid acceleration on patients in simulating manned flight conditions using a centrifuge.

The oximeter consists of a small sensor mounted in the ear, plus a small electronics package which can be set at the patient's bedside.

The absorption of infrared radiation by the blood is directly related to the oxygen content of the blood. The onset of shock is accompanied by a reduced amount of blood and reduced oxygen content of the blood flowing through the ear lobe. Changes in the infrared absorption and blood pressure cause the oximeter to set off an alarm, alerting medical personnel to take prompt corrective action.

Encouraged by the oximeter's possibilities, cancer researchers are working with NASA technicians to adapt the oximeter for wider use in medical clinics.

The oximeter adaptation effort is an example of hundreds of instances in which technology application teams are seeking to identify technical problems in the public and private sector.

The key to success in any of the BATEAM projects is precise problem definition. Dr. F. T. Wooten, Director of the BATEAM at the Research Triangle Institute, believes that personal interaction between physician and NASA scientist is of paramount importance in determining the specific engineering impediment to medical

Dr. Wooten has called NASA's BATEAM project, "the first vital step in the goal of a technological society to insure maximum benefit from the costs of technology."

The four BATEAMS zeroing in on biomedical activities in medical research, public health, and clinical medicine, cooperate with 77 organizations and institutions and have detailed and defined more than 760 problems to date.

All eight BATEAMS established thus far, working in their respective areas, have proposed well over 200 problem solutions which would incorporate space program technology.

DID YOU KNOW . . . that ten years ago today, Robert R. Gilruth was named Director of MSC? Also on this date, evaluation of the inflatable flotation collar used on spacecraft during recovery was completed. A current fact of interest . . . did you know that in August 1970, 20,000 passengers used MSC taxis? That's compared to 32,000 passengers in August 1971.

August is record month for visitors

More people visited MSC last month than in any other month ever recorded.

Some 197,249 visitors took walking tours or bus tours, both of which begin with the exhibit area of the Building 1 Auditorium.

Three new displays are now set up in Building 1. "Space Systems of the 70's" is a slide and sound show which includes information on Skylab, Shuttle, and Space Station projects. There are also two exhibits detailing recent Skylab and Space Station studies.

The previous record for numbers of visitors was 194,539, set in July 1970 during the 1st year anniversary celebration of the Apollo 11 lunar landing.

The total number of visitors from January through August of this year is 734,518. That number is expected to surpass one million by January 1972.



U.S. CIVIL SERVICE COMMISSIONER Ludwig Andolsek (left) visited MSC recently and was greeted by Director Robert R. Gilruth (right). After meeting with a number of center officials, Andolsek toured MSC facilities. One of his several stops around the site was the Lunar Receiving Laboratory where Director of Science and Applications Anthony J. Calio explained some of the work being done in analyzing the Apollo 15 rock samples. One of the interesting rocks shown to Commissioner Andolsek was the vesicular rock, which looks something like a hardened sponge and which, scientists suspect, may float on water.

NASA sponsors heart disease study

A unique approach to solving significant medical problems in heart disease will be used by a newly-founded NASA-Stanford University research team.

This Biomedical Technology Team (BATEAM) will apply aerospace technology generated by NASA to major problems in the field of cardiology.

The team, based at Stanford's School of Medicine, is under the direction of Dr. Donald C. Harrison, Chief of the Division of Cardiology. Under NASA contract, the project is part of NASA's Technology Utilization Program.

The Stanford group, the fourth BATEAM established throughout the country, is the first to be formed at a leading school of medicine.

The Stanford program is also unique in that it will, for the most part, concentrate on problems in only one area, cardiovascular medicine. Several major medical centers on the West Coast will be contacted to obtain significant problems to work on, which may be solvable by NASA technology.

The team will consist of five medical consultants and two administrative staff members from

the Medical School, as well as five aerospace engineering consultants.

NASA currently has eight special teams charged with identifying individual problems and proposing solutions based on aerospace technology. Four of the teams concentrate on environmental problem areas. Four biomedical teams, of which the Stanford research team is one, concentrate on biomedical activities in public health, medical research and clinical medicine.

The new program will increase the joint research efforts of Stanford and the NASA Ames Research Center in California. Ames, the leading NASA center in life sciences research, will be a key technology resource for the new team.

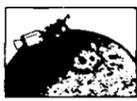
Dr. Harrison and his staff have worked closely with Ames for the past several years, with many clinical innovations resulting. In April, an Ames-Stanford team devised a computer system to watch a movie of the beating of a patient's diseased heart—identifying dead spots or scar tissue in the heart wall, aneurysms (bubble-like projections of the heart muscle) and other malfunctions.



ADMIRABLE ADMIRAL—Alan Shepard (center) looks on smilingly as Navy Secretary John Chafee (left) and Admiral Ralph W. Cousins, Vice-Chief of Naval Operations, place the rank symbol of Rear Admiral on Shepard's uniform. In an interview after the Washington ceremony, Shepard said that he intended to continue in his post as Chief of the Astronaut Office here at MSC.

ROUNDUP

NASA MANNED SPACECRAFT CENTER HOUSTON, TEXAS



The Roundup is an official publication of the National Aeronautics and Space Administration Manned Spacecraft Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for MSC employees.

Editorial Staff: Sydni Shollenberger, A. "Pat" Patnesky



CONNIE AND CREW — Actress/Singer Connie Stevens met the Apollo 15 crew last week during a tour of the Center. In case you need to be told, the guys are (l. to r.) Al Worden, Dave Scott, and Jim Irwin. The doll, of course, is Connie!

Researchers say white rock is old

(Continued from Page 1)

method. The key to age is the relationship between potassium and argon content. The Stony Brook group uses an ultra-sensitive rare-gas mass spectrometer and a high-flux beam reactor. The method allows dating of materials with very low abundance of naturally radioactive chemical elements.

Dr. Husain noted, however, that the white rock's dating was a very difficult challenge because its potassium content—one hundred parts per million—was about one-twentieth of the content of most moon rocks.

When it was found, the so-called "Genesis rock" elicited cries of excitement from Apollo 15 astronauts Dave Scott and Jim Irwin because it was a predominantly white rock with large crystals of the mineral group

Lions will make your grass grow

The Bay Area Lions Club will hold a lawn food sale on Saturday, October 2 to benefit the Texas Lions Camp for Crippled Children at Kerrville.

The sale starts at 9:00 a.m. in the Nassau Bay Bank parking lot.

called plagioclase. Scientists had anticipated that this type of rock, called anorthosite, would prove very old.

Country Theater Opens new season

The Clear Creek Country Theater in League City kicks off its new season today—Friday, September 24—with a production of the sparkling comedy "Third Best Sport."

With a cast of ten, the comedy will run Friday and Saturday nights for four weekends through October 16. It's easy to get tickets. Just call 932-3714 for reservations.

"Third Best Sport" is just one of five plays to be offered in the season ahead. The second play, to be presented in late November and early December, is a musical, "You're a Good Man, Charlie Brown," based on Charles Schulz' *Peanuts* characters.

In January, the comedy-drama "Lillies of the Field" will take center stage, followed in March by another musical, "Stop the World, I Want to Get Off." A fifth play, yet to be chosen, will be presented in late April.



CONGRESSIONAL VISITOR — U.S. Representative Bob Eckhardt of Texas (center) views a series of Earth Resources photographs during his recent visit to MSC's Earth Observations Division facilities. Bryan Erb (left), Manager of the Division's Application Office, points out something of interest in the strip of photos. Congressman Eckhardt, a member of the House Science and Astronautics Committee, was accompanied by his administrative aide, Keith Ozmore (right).

Roundup Swap-Shop

(Deadline for Swap-Shop classified ads is Thursday of the week preceding **Roundup** publication date. Ads are limited to MSC civil service employees and assigned military personnel. Maximum length is 20 words, including name, office code and home telephone number. Send ads, typed or legibly written, to **Roundup** Editor, AP3)

MISCELLANEOUS

Power rotary lawn mower, good cndn, \$15. Armitage, 877-4258.

Deer lease: Openings on year-round deer lease at Johnson City, Texas, father-son, house on river, \$200. Smith, 488-3238.

J-3 Piper Cub, low time engine, xln fabric, tires and shocks. July annual. Siler, 591-2787.

Lawn mower, 3 Hp 4-cycle Briggs and Stratton engine. Nitschke, 491-4531.

Dynaco stereo system, FM-3 tuner, \$65; PAS-3 pre-amp, \$40; Stereo 70-power amplifier, \$50—or best offer. Chase, 877-2158.

Cover for 8' Fleetside pick-up made from Econovan. Yours for hauling away. Lauritzen, 944-3615.

Refrig/freezer, xln, \$100; Roberts stereo reel tape recorder and tapes, \$150. Thompson, 932-3653;

Almost new (6-months old) Mitchel 6-string guitar w/case. Never used, \$30. Lablanc trumpet, \$60. Hannigan, 534-4292, Dickinson.

Colt 30-06 rifle w/ 2 1/2 - 8 variable scope, loading dies, powder, and brass, \$150. Will trade for automatic 20 gauge shotgun. Randall, 932-3884.

21" lawn mower, good cndn, \$20. White, 488-1024.

2-door frost free refrigerator/freezer, 14 cu. ft., xln cndn, \$100. Jacobsen, 877-2852.

Full size ping pong table w/4 paddles and net, \$20. Jacobsen, 877-2852.

Cleveland tenor sax, xln cndn, good for high school band, \$225. Miller, 471-2789.

20 ga. Rem model 48 shotgun. Poly-choke, \$75. Weitz, 591-3071.

Four tickets to the Texas-Arkansas game October 16 in Little Rock. McPhillips, 877-1718 or 534-2844.

Medium brown human hair fall; original-price \$60, will sell for \$25. Ash blond synthetic wigs, bought for \$40, will sell for \$20. Rios, 483-5135.

Wet suit, medium to large, \$50 or exchange for small wet suit. Cozens, 645-2834 or 483-5111.

Ludwig snare drum w/case, stand, practice pad, marimba sticks, Franz metronome. All for \$70. Wilson, 591-3886.

Selmer auto saxophone w/case, good cndn, lyre and stand, \$175. Wilson, 591-3886.

Divided aluminum set tubs, w/cover, xln cndn, \$15. Matties, 944-3586.

Pool table, Sears, good cndn, \$25. Matties, 944-3586.

RCA TV, like new, colonial, B/W, 21" console, \$100. 63 model, stored since 66. Matties, 944-3586.

Translation index Now in Library

The increasing importance of world science and technology has led the MSC Technical Library to provide a method of bringing the major technical literature translated into English to library users.

The Technical Library has subscribed to *Translations Register-Index*, a twice monthly publication listing by subject and original source the latest available translations from the expanding world of natural, physical, medical and social science and foreign patents.

Published by the National Translations Center in Chicago, the reference magazine lists the availability of translation from three dozen foreign languages divided into hundreds of subjects from aerospace and metallurgy to geology and medical research.

The Translations Center has on file approximately 165,000 translations. This figure is increasing at the rate of more than 1500 a month. In addition, the Center has records on the locations of more than 200,000 translations available from other sources.

The *Translations Register-Index* is available now at the Technical Library in Building 45.

2 ea. 10 gal. aquariums complete with fish, \$25 for both. Matties, 944-3586.

3 table lamps, mdrn, 2 blk, 1 wht, with shades, \$5 each or 3 for \$12. Brown, 488-0649.

GE Portacolor 66 model, good cndn but needs minor adjustment, \$75. Brown, 488-0649.

Simmons hide-a-bed, traditional sofa, new cndn, 90" long, 8 cushions, \$495 new, asking \$225. 591-3867.

12-string Ventura guitar with pickup and case, \$125; Fender mustang guitar, \$150; violin and bow, \$100. WA8-3595.

Mossberg model 395KA bolt-action, 3-shot, 12-gauge shotgun with case, \$40. McKee, 424-7927, Baytown.

52" round oak table, curved front china cabinet, ice cream parlor table and chairs, other furniture and glassware. 877-1818.

Camper extendable bumper—all fittings—slide in trailer hitch, \$40. Glynn, 488-4453.

VEHICLES

70 Hornet SST, V-8, full power, air, 4-dr, \$2095. Stockum, 944-6544.

71 Suzuki, 90 cc trailbike, 800 miles, \$350. Reese, 944-4925.

68 Volkswagen sedan, air, radio, lt blue w/black interior, \$1125. Moncrief, 591-2616.

69 LTD FORDOR, all power, A/C, low mileage, very clean. Siler, 591-2787.

69 Yamaha, 80 cc, street or trail, electric start, good cndn, \$175. Armitage, 877-4258.

65 Lemans hardtop, air, power, automatic, one owner, xln cndn. See, drive and buy for \$950. Palazzola, 488-0125.

71 Cadillac, coupe de ville, 9000 miles, under new car warranty for 4 more months. Conrad, 483-2411.

69 VW sedan, low mileage, good cndn, \$1250 or best offer. Renegar, 932-4210.

64 T-bird, A/C, automatic, power steering and brakes, radio, good cndn, \$350. Glover, 877-3384.

69 VW Karmann Ghia, automatic stick shift, A/C, xln cndn, \$1750. Harris, 877-2651.

69 Renault 10, air, auto, radio, \$1050. Breiby, 488-3196 after 4:30 p.m.

65 Comet 4-door, A/C, automatic, xln body and mechanical cndn, \$695. Smith, 877-1111.

Chevrolet parts, will fit 55-57 models. Radiator, starter, generator, standard transmission, 6-cyl, 235 engine (runs), brake parts, plus other parts. Boykin, 877-2142.

65 Volkswagen, rebuilt engine, new paint job, \$375. 488-3484.

"Go Cart" Dual Motor mounts, one 10-horse West Bend engine, \$150. 488-3484.

64 Volkswagen sedan, radio, good cndn, \$350. Dorland, 488-3258.

66 Sunbeam Tiger, 260-V8, standard equipment, beautiful cndn, \$1500 or best offer. Patterson, 877-2131.

Go-cart, 7 H.p. West Bend two-cycle engine, xln cndn, \$125. Matties, 944-3586.

Two Spider bikes, \$7 each and 24" conventional, \$10. Matties, 944-3586.

BUY U.S.

SAVINGS BONDS

70 Pontiac wagon, 3-seater, fully equipped, new cndn, retailed over \$5400 new. Best offer over \$3100 buys. Milton, 877-2165.

Assorted small block Chevy pieces, plus clutch—free. Trichel, 481-1940.

62 Rambler American, Sta. wgn., std., 6 cyl., one owner, \$190. Reim, 944-3795.

BOATS

21' South Coast sailboat with working sails and 5 HP OBM. Hill, 932-5269.

Air boat, 16' x 6', plywood hull, Convair engine, w/5' aluminum prop, \$450. Perry, 483-7488.

Lido 14 sailboats, where they are, condition, cost and other information maintained by Lido Fleet. Hoover, 877-3366.

17' 2" Tri-hull boat w/120 HP outboard, trailer, and all accessories. Ideal for fishing and skiing, \$2495. Bland, 591-4580.

Luxurious 16' 2" speed boat w/120 HP outboard, trailer, and all accessories including professional ski tow bar. All 1971 models in mint condition, \$3795. Bland, 591-4580.

REAL ESTATE AND RENTALS

Residential lot, 100' x 135' in southeast Houston and 2 residential lots in northeast Houston. Bennett, 649-3576.

80' x 200' beautifully wooded lot, Dickinson, all utilities, \$4500. Plauche, 474-2660.

Beautifully wooded acre w/10' x 20' cabin, refrigerator, 4 built-in bunks. Great for weekends. Jacobsen, 877-2852.

Private camping lot, Texas Campgrounds, Conroe area, heavily wooded, pool, electricity, showers, laundrymat, fenced, caretaker, \$625. 472-8208.

Seabrook — leased unfurnished duplex apartment, 2 BR, 1 1/2 bath, garage, central air, fenced yard, all appliances, carpeted, drapes, \$160/month. Lockard, 534-4714, Dickinson.

East Texas: 60 beautiful wooded acres near large lake, two spring-fed creeks, good hunting, fishing. \$250/A, \$1,000 down, ba-

lance 10 years. Yawn, 941-3880 after 6 p.m.

PETS

AKC Beagle puppies, hunting stock, ready Sept. 15th, \$30-\$35. Boykin, 946-1794.

AKC Beagle at stud, Boykin's Bawling Boy, fine hunting stock, \$35 stud fee. Boykin, 946-1794.

Female Bassett hounds, 1 spayed 2-yr. old, 1 7-mos. Good home is prime consideration. \$25 for both or \$15 each. Brown, 488-0649.

Shaggy Old English sheepdog puppy, champion-sired, for show or pet. Patterson, 877-2131.

WANTED

Home for two-foot Mexican rattlesnake. Present owner's wife has reached point of rebellion. Juday, 481-3946.

Good, clean 1965-66 Mustang, A/C, will pay retail price. Wilson, 591-3886.

One pair water skis, 1 12-volt battery charger, picnic table w/benches. McCollum, 481-1847.

Source of organic/natural fertilizers, i.e. ground phosphate, ground granite, wood ashes. Hooper, 488-4120.

WSTF Employees Win Degrees

Two White Sands Test Facility employees in the Laboratories Office recently completed requirements at New Mexico State University for advanced degrees.

Leonard A. Schluter was awarded a PhD in chemistry and David L. Phippen received his Masters degree in electrical engineering.

Schluter completed the doctoral program over a fourteen year period. During that time, he took a one-year leave of absence to perform concentrated dissertation studies.

Phippen completed the master's program over a five-year period.

Japan, U.S. swap Computer Data

Arrangements have been completed for NASA to exchange selected computer programs with Japan's Hitachi Central Research Laboratory. Altogether, four programs are involved in the swap.

This is the first instance of a NASA-developed computer program exchange with an organization in a foreign country, except those relating to joint research projects. Negotiations for such exchanges with groups in other free world nations are now in progress.

New show on tap at Burke - Baker

A show depicting the way in which telescopes have stretched man's understanding of the solar system is the fall program at the Burke Baker Planetarium in Houston.

Called "The New Universe," the show will be featured through November 28 on Wednesdays and Fridays at 4 p.m., Fridays and Saturdays at 8 p.m., and Saturdays and Sundays at 2, 3, and 4 p.m. Call 526-4273 for reservations.